Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of	)	
	)	
Location-Based Routing For Wireless 911 Calls	)	PS Docket No. 18-64
	)	
	)	

COMMENTS OF VERIZON

I. INTRODUCTION AND SUMMARY

Based on trial experience, Verizon agrees that location-based routing is technically feasible and can mitigate (although not eliminate) the number of instances in which 911 calls are routed to PSAPs outside the caller's jurisdiction. The Commission is thus right to seek input on the measures that wireless, Next Generation 911 ("NG911") providers, and PSAPs will need to undertake to ensure that consumers benefit from location-based routing of 911 calls.[1] Verizon actively participated in and supported the CSRIC V Working Group 1 recommendations, and has direct experience with location-based routing ("LBR") from the perspective of both a Next Generation 911 ("NG911") platform provider *and* a wireless provider through the company's support of the NG911 LBR trial administered by the State of California a few years ago.[2]

Stakeholders will need to carefully allocate the roles and responsibilities of wireless service providers and state/local governments in deploying and maintaining LBR capabilities to

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1 *Location-Based Routing For Wireless 911 Calls*, Notice of Inquiry, PS Docket No. 18-64, FCC 18-32 (Mar. 23, 2018) ("*Notice*").

2 *See* Communications Security, Reliability and interoperability Council, Working Group 1, *Evolving 911 Services, Final Report – Task 2: 911 Location-Based Routing*, at 12-13 (2016) ("*CSRIC V LBR Report*").

ensure that LBR is deployed efficiently and effectively. Most important for consumers' public safety needs, LBR should be implemented in manner that does not undermine the reliability of wireless 911 call routing. That, as a practical matter, will require the continued availability of cell sector-based routing for the foreseeable future. Finally, in the interim period, the Commission should support the use of existing best practices to improve and maintain the reliability of cell sector-based routing.

II. STAKEHOLDERS SHOULD ADDRESS THE APPROPRIATE ROLES OF WIRELESS SERVICE PROVIDERS AND STATE/LOCAL GOVERNMENTS TO IMPLEMENT LBR EFFICIENTLY AND EFFECTIVELY.

Verizon's experience in the California NG911 trial demonstrates that LBR is technically feasible and can reduce the instances in which a 911 call originating from a handset located in one PSAP jurisdiction is transmitted to another. As the *Notice* explains, however, this outcome is contingent on a wireless service provider's ability to reliably deliver accurate-enough location data in time to route the voice call in accordance with the caller's location fix, which is technically challenging using the E911 location technologies available to service providers today. While Verizon could deliver the needed call location information for many 911 calls in the California NG911 trial quickly enough to accomplish this, the trial was limited to 911 calls on its CDMA network and VoLTE presents significant new challenges.[3] And, as the Commission has previously acknowledged, there is a trade-off between the speed of the location fix and its accuracy due to the need to process and validate GPS and other location information used to calculate the fix. To ensure that service providers and PSAPs implement resources efficiently and effectively, future LBR implementation should account for service providers'

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3 *See CSRIC V LBR Report* at 13.

actual location accuracy and data delivery capabilities and should supplement, not replace, cell sector-based routing.

Consistent with the California NG911 trial, stakeholders should implement LBR in conjunction with PSAPs' NG911 capabilities. As the Commission has previously found, determining which PSAP should receive a 911 call in a particular area is a policy decision for the affected PSAPs.[4] Deploying 911 call routing capability within a NG911 platform helps preserve a PSAP's discretion whether to use LBR or cell sector information to route a given 911 call, and has the benefit of incentivizing state and local governments to support NG911 implementation in their jurisdictions. State and local governments should also play the principal role in managing consumers' expectations. LBR is dependent on the handset's ability to deliver an accurate and timely fix which, for well-established reasons, is not feasible for every 911 call. Many 911 calls will thus require cell sector-based routing for the foreseeable future and most PSAPs' practice of asking 911 callers "where are you located" will likely remain appropriate.

III. LBR IMPLEMENTATION SHOULD PRESERVE, NOT COMPROMISE, THE RELIABILITY OF 911 CALLING.

It is well-understood that LBR will be an important component of NG911, and stakeholders can and should begin the planning, funding, and standards efforts necessary to

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[4] *See* 47 C.F.R. §§ 20.18(b), 64.3000-64.3002; *Revision of the Commission's Rules To Ensure Compatibility with Enhanced 911 Emergency Calling Systems*, Memorandum Opinion and Order, 12 FCC Rcd 22665, ¶¶ 98-99 (1997) ("carriers need to coordinate with the state and local governmental entities to determine the designated PSAP, particularly where their service areas cover multiple political jurisdictions"); *Implementation of 911 Act, The Use of N11 Codes and Other Abbreviated Dialing Arrangements*, Fifth Report and Order, First Report and Order, and Memorandum Opinion and Order on Reconsideration, 16 FCC Rcd 22264, ¶ 21 (2001) ("once a State or locality designates a PSAP, carriers must commence the transition to 911 immediately following that designation").

begin implementing LBR. But LBR and cell sector-based routing are complementary rather than mutually exclusive. In that regard, Verizon supports the CSRIC V recommendation and the *Notice*'s finding "that call holding [should] not be pursued as a [LBR] solution," as it "may require long wait times until connection and lead to callers hanging up."[5] Indeed, for many (likely the majority) of 911 calls, a call holding for LBR to work would not improve routing *at all* since the outcome would differ only when the cell sector straddles a jurisdictional boundary. It would make no sense to hold a call for LBR purposes—and jeopardize call completion—in cases where LBR could not result in improvement over cell sector-based routing.

Consistent with the CSRIC V recommendations, an interim or quick fix approach that can rely on cell sector-based routing as a fallback, similar to what was employed in the California NG911 trial, would be a preferable approach.[6] Wireless networks will continue to face terrain and technology challenges that will limit the efficacy of efforts to improve cell sector-based routing through new device-level ALI capabilities. Overcoming these challenges will depend on future device-level enhancements in most instances, so it may be some time before LBR can uniformly benefit 911 callers. And if the wireless provider cannot adequately validate the accuracy of a location fix, or if the cell sector lies entirely within a single PSAP jurisdiction, cell sector-based routing often remains in the 911 caller's and the PSAP's best interest.

Regarding those new device-level capabilities, Verizon agrees with the CSRIC V report that leveraging device-based hybrid technology has potential to support and eventually improve

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5 *See Notice* ¶ 19.

6 *See id.* ¶¶ 20-21; *CSRIC V LBR Report* at 12-13.

LBR capabilities.[7] These technologies, however, will face many of the same technology challenges as existing E911 location capabilities in indoor and other environments where location-based technologies have limited access to GPS or Wi-Fi signals, and in the timing of delivery. And today device-based hybrid solutions function independently of wireless service providers' E911 systems, relying instead on commercial third party proprietary databases and location-based services. 911 call routing is solely a PSAP decision, so PSAPs would need to resolve any concerns for the reliability and security of call location and routing directly with vendors of those services rather than with wireless providers.[8] Similarly, reliable use of geo-coding and civic addresses to route calls has the potential to support LBR but would also depend on new network *and* device-level ALI capabilities rather than end user-entered location information (as is currently used for nomadic interconnected VoIP services).[9] And as the CSRIC V report indicated, cell sector-based routing would still be needed as a fallback in all cases.[10] 911 calls are too important not to have that fallback.

Finally, wireless providers', PSAPs' and 911/NG911 providers' responsibilities should run in parallel to ensure that all parties' resources are used efficiently and that LBR is implemented reliably. PSAP systems, not just wireless networks, may require a number of software programming and other changes. And PSAPs' and wireless providers' ability to handle LBR would require testing to ensure reliability. Stakeholders should account for all of these

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7 *See Notice* ¶¶ 24-25; *CSRIC V LBR Report* at 16-20.

8 *See* APCO, CTIA and NENA, Joint Letter to Marlene H. Dortch, Secretary, Federal Communications Commission, RM-11780 and PS Docket No. 07-114, at 1-2 (Apr. 4, 2018).

9 *See CSRIC V LBR Report* at 14-15, 20-23.

10 *See id.* at 19.

factors in planning and implementing NG911-compatible LBR solutions as they become available.

IV. STAKEHOLDERS SHOULD WORK COOPERATIVELY IN THE NEAR TERM TO IMPROVE EXISTING 911 CALL ROUTING PRACTICES.

The availability of LBR for 911 calls will depend on new network, device, and PSAP capabilities. So, even in the best of circumstances, it will take time for wireless consumers and PSAPs to widely realize the full benefits of LBR. The Commission should thus encourage all stakeholders—wireless service providers, 911/NG911 service providers, and PSAPs alike—to work cooperatively to improve the existing system of cell sector-based routing. Many relevant best practices and other standards already exist to achieve this goal.[11]

As part of their standard troubleshooting practices, wireless providers routinely respond to PSAPs' concerns or questions about whether a particular cell sector-PSAP routing designation remains accurate or may require an update. Timely discussions between service providers and PSAPs when new sites are deployed, when existing cell sectors are modified, and when adjacent PSAP jurisdictions consolidate or agree to alter their existing arrangements, can help mitigate routing-related disputes. This, in turn, can help mitigate the differences between cell site-based routing and LBR in the interim period. And given that LBR is most relevant at the edge of a PSAP's jurisdiction, as wireless networks densify the circumstances in which a cell site's coverage extends well into an adjacent jurisdiction could be mitigated over time. Finally, some

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[11] *See, e.g.*, CSRIC Best Practice 8-8-0902 ("Service Providers and Network Operators when reconfiguring their network … should assess the impact on the routing of 9-1-1 calls."); NENA, *NENA E9-1-1 Wireless Maintenance Call Routing & Testing Validation Standard*, Document 57-002 (2007); APCO International, *Wireless 9-1-1 Deployment and Management Effective Practices Guide*, APCO ANS 3.103.2, at 16, 47 (2013).

jurisdictions have configured their 911 services to require inter-PSAP call transfers irrespective of service providers' routing practices. Some states, for example, have required that all wireless 911 calls be routed first to the state highway patrol or another centralized public safety office, rather than to PSAPs directly serving consumers and first responders in the 911 caller's area. States and localities that direct service providers to route wireless 911 calls this way would need to revisit their policies to benefit from LBR.

CONCLUSION

LBR is feasible and can result in improvements over cell sector-based routing. But LBR is not a panacea, so cell sector-based routing will be needed for the foreseeable future as either a primary or fallback 911 call routing method. Deploying LBR efficiently and effectively will require a clear delineation of responsibilities among service provider and government stakeholders, as well as improvements in 911 location and call delivery. So while stakeholders address those issues, in the interim, the Commission should support the use of existing best practices to improve and maintain the reliability of cell sector-based routing.

Respectfully submitted,

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